

Value of Solar Capacity Options

Solar Working Group

June 9, 2015

Jesse Harlow

Engineer, Renewable Energy Section
Michigan Public Service Commission



MICHIGAN PUBLIC SERVICE COMMISSION

VoS Capacity Value Options

Capacity Value Description	Capacity Value \$ per MW-Year	\$ per kWh
Consumers Energy's embedded capacity cost from U-17725 A-6	\$175,362	
MISO CONE for Michigan Zone 7	\$90,100	
Consumers Energy's ZRC Reverse Auction Results	\$30,000	
MISO Planning Reserve Auction	\$1,270	
2015 MPSC Staff Transfer Price		\$.068
Palisades Standby Capacity Charge	Not Publicly Available	
PURPA Contracts - Various Capacity Rates		0 - 0.054
Estimated MISO Effective Load Carrying Capability of Solar:		0.45
Annual Solar Generation per MW in MWh (DC installed):		1226
Solar Capacity Factor:		0.14



Consumers Energy's Embedded Capacity Cost U-17725

Total Consumers energy capacity costs less transmission expense, less critical peak purchase power divided by total nameplate capacity and capacity life.



MICHIGAN PUBLIC SERVICE COMMISSION

MISO Cost of New Entry (CONE)

Calculated on a zonal basis based on the annualized capital cost of constructing a new plant. Currently based on a combustion turbine plant.



MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy's Zonal Resource Credit (ZRC) Reverse Auction

On August 12, 2014 Consumers issued an RFP for ZRCs from 2015-2020. Prices ranged from approximately \$27,000 in 2015 - \$69,000 in 2018.



MISO Planning Reserve Auction

Yearly auction designed for utilities to purchase capacity for any deficiency in meeting planning reserve margin.

UCAP – unforced capacity ~ 7.1%

ICAP – installed capacity ~ 14.8%



MICHIGAN PUBLIC SERVICE COMMISSION

Staff Transfer Price

Based on a natural gas combined cycle proxy plant.

	2015 Transfer Price Schedule	Fixed Component
2015	\$68.27	\$32.06
2016	\$69.40	\$32.61
2017	\$72.52	\$33.61
2018	\$75.07	\$34.52
2019	\$77.44	\$35.27
2020	\$79.37	\$36.04
2021	\$80.50	\$36.75
2022	\$81.64	\$37.33
2023	\$83.50	\$37.91
2024	\$84.72	\$38.43
2025	\$86.71	\$39.01
2026	\$88.28	\$39.56
2027	\$90.02	\$40.17
2028	\$92.68	\$40.81
2029	\$94.55	\$41.38



MICHIGAN PUBLIC SERVICE COMMISSION

Standby Capacity Charge

Tariffed Costs for Standby Capacity

Consumers Energy standby service customers take service under General Service Self Generation Rate GSG-2. The capacity portion of power supply standby charges is “...the highest contracted capacity purchased by the Company in that month, plus allocated transmission and ancillaries.” (Staff believes this to be the Palisades contract.)



MICHIGAN PUBLIC SERVICE COMMISSION

PURPA Contracts

Capacity based on current PURPA contracts



MICHIGAN PUBLIC SERVICE COMMISSION